

signals generated at random = parasite (12)

How can we eliminate parasite in power

TX - by neutralizing

Voice varies freq back & forth = FM

meg to kilohertz - 3 next

CW or morse code = chips can be corrected by better output voltage regulator

RF signals above 20,000 become hertz become radio signals

Yagi = radiates signals 1 direct - same as beam

~~Two~~ Vert - all direct

dipole - 2 direct

Smallest element yagi = smallest director

will give diagram - in section C

Driven element  $\frac{1}{2}$  wave length

1000 ohms match to 50 ohm - impedance matching device or balun

why use  $\frac{5}{8}$  wave or  $\frac{1}{4}$  wave = more gain

talk SSB or voice - use mikes

CW = key

computer - keyboard

received - handout 3

(13)

Novice review

amateur - self time

Part 97 except str const

operates str - control op

ma lic = authority to operate a str

str lic = call sign

AA22 = US

K

A

N

T

W

current mail by E correspond

no opr = rep forward you

Intnl = 3rd party agreement

QSO = conversat

AR = end of msg

CQ = general call

QTH = location

limit access - key opr off/on

id = every 10 "

at end QSO

entry level - novice

above Tech

no busm

(missed 3-4 quest) di-rever  
current 2 direct AC  
1 direct DC  
voltage - water pressure  
current rated amps  
resistance " ohms

Sensor =  
sky wave  
- UHF UHF = ground or d

freq to band = 300  
28 = 10 mhz  
21 = 15

ant  
 $468/f = 1/2 \text{ wave}/f$   
 $234/f = 1/4 \text{ wave}$

$1/2$  for 10 & 16  
 $1/4$  ft 10 = 8 ft

LF turns = away from face  
meter measure forward to reflect on = SWR  
or direct with

sig scattered at random = parasitic or  
eliminate by neutralizing spurs

(15)  
harmonics = mult

2nd  $\times 2$

3rd  $\times 3$

Voic mor-back

+ fast = fm

Chirp = prevents by  
better output voltage  
regulate

signals above what  
to becom radio

20000

Beam - gage - 1 direct  
smest - director sect  
driven el  $\frac{1}{2}$  wave  
length

Devic 1000 = 50

match - impedim

voice - mkr

cw - R<sub>2</sub>

Compt keyboard

~~At the end of the~~ (16)

Scan

Distress = Can do  
anything to make  
contact

Grounding the equm

- lightning storm -  
ground

Conductors + insulate

- insulator - gase  
glass

air

porcelain

plastic

- conduct - gase

gold

alum

silver

plat

mike to transv,

SWR - ant cw -

anter

wave line - reser

with diag var resist

arrow to grid - (17)  
ground

constellations - double  
pole, double throw

1 min break

Tech - "Sand - are you  
still there?" "yes"  
Where is  
control op located at  
control point

3rd party = as long  
as control op at control  
point  
Use min power - per  
FCC

read 5 report - only quest  
5 perfect in pool  
7 moderate.

FCC - use repeat -  
pause ~~freq~~ between  
briefs  
transmission

FCC - declare state  
of emerg when disaster  
disrupts normal  
comm

first time from 18  
disaster - tactical  
temporary KT

2nd 3rd parties -  
after each exchange  
of transmission

\$ trans 52.5  
tech  
genl  
adv  
extra

Anything 50 mhz  
remote control = no ID  
no addr, call sign  
affixed

Amardo may rebroadcast  
space shuttle by  
permis of NASA

Rpts  
received input  
transmit - output  
6 mhz  
i/o = 52 mhz - 1 mhz

145<sup>mb</sup> - 2 meters  
0.6 mhz

(19)

222.1 = 1600 KHz

What causes VAP to  
bend - Tropo

lowest layer prop -  
E layer

2 layers 2 day 1 nite =  
F

lowest dense - D dense  
day

best read SWR on  
watt  
ant term want  
jack

multimeter = VCR

direct watt = fwd  
+ reflect power

min volt consid  
danger = 30V

determined by

ANSI

where does black (20)  
or red - fuse

turning = dummy  
L

capac - stores energy  
basic unit farad  
micro farad 10<sup>-6</sup>

dielectric  
Capac rated  
micro farad  
+ volts

ohms - VCR  
inductors store +  
opposes chg

band pass - pass  
attenuate above  
below

high pass - passes hi  
attenu lo  
low pass

resistor = resists

4th band - tolerance  
in %

CW = AM-morse (21)  
AIA = ITU  
Teg

Vert ant = electric  
waves travel  
perdic to earth  
surface

What device matches  
balun

Yagi - parallel +  
parasitic  $\frac{1}{2}$  wave  
length

balanced ant at  
feed point -  
sym

RF - keep ant near  
FM sim' to phase  
mod

if rec mod fails  
unmodulated CW  
wave

tolerance  
Centre opv at ctrl pt (23)  
3rd party un lic - ctrl  
opr at ctrl pt

FCC - ctrl

Rptr = FCC = pause buffer  
between trns

1 stress disas - tactical  
state of emerg - FCC  
disaster - disrupt  
comm

novice - await tech  
call sign - temp KT

Intnl 3rd comm - ID  
after evig trns

52.5 - T

G

A

E

146.5k

Remote ctrl -  
no addr call

ama opr - may  
rebroad - Spce Shut  
Perm of Nasa

(23)

repeater  
input 1 mhz 6 mhz  
out 52 mhz

146.22 mhz  
0.60 mhz

222.1 1/4 = 1600 kHz

VHF - signals to bend  
tropo

layer of ions -

retards D

lowest time E

2 to 1 F

best or most accurate  
ant term want  
F jack

multimeter

VCR

direct wattmeter  
forward + reflect

min V danger =

30 V

ANSI - RF

exp limits

Black + red - fuse

dummy load

capacitors:  
micro

dielectric

band pass -

lo ps

hi ps

inducts - store +

oppose

4th band toleran  
in %



(25)

ITU = 1

Vert - electro line off  
perpendicular  
to earth

balun - matches

Fm = pm

Yagi paraxit  
Parabola

min  
2 RF = ant at ground  
~~VE's arrived - no paper work~~  
VE's = not ascert 8/24/91

School

Tom take many  
reserved sheets

317 6815 orig

sched in  
Mar Vista

(if paper work lost  
contact tom - give  
na loca date

(26)

once we take  
epam, sent by  
Tom to Texas  
W54I

If we see guest we  
recog, it's because  
charlie teaches from  
same pool epam  
given from.

Sandy passed out  
610 & ans form

VE's didn't bring  
tests. Sands had  
all 3 tests, Tom  
to select which test

On 610

Put locati as Mar Vista  
not Marina Del Rey  
- class held at Sandys

(27)  
No code tests  
will be given. Brought  
a no code tech  
test team

Sandy requested  
photo id (one) looked  
at pict. said it was me  
2 people - same  
last name - don't  
know each other.  
Tom questioned  
to see if they should  
be separated from  
sitting next to each  
other

8 year old  
Tom got Dr Beebe  
Sandy - low many  
noise package  
here low  
Bob + Mike Bryant  
N6MSO

(28)  
will handle rest  
of test - Tom will  
do paper work  
Tom passed out test sheets  
2 below - Sandy to top. Mike  
21-4 missing when  
exam passed out. See p. 27

Tom asked Sandy  
about it saying  
he never sees the  
exams, they're  
generated by  
computer. Sandy  
went to package  
& got diagrams.

Sandy passed out tech  
tests and tech exams  
to those seated below  
& to me at table  
Tom not in room  
at start of T6C returned  
410

(29)

When Tom asked  
if there were  
3 pkgs of exams,  
Sandy got an  
envelope & started  
to open it. Tom  
told her to give it  
to one of the VEs (Bob).  
(Bob, when I couldn't  
find one of the diagrams  
Tom asked Sandy  
about it and Sandy  
said it was in one  
of the pkg's. She went  
& got it. Mike handed  
it to me.

Sandy came by to  
be sure I had entered  
series test on tape, &  
noticed & mentioned  
that I had a

(30)

different test from  
everyone else  
(out load).

During my tech 400  
exam, Mike said -  
"where's Tom?"  
Sandy "I don't  
know"

About 10" later  
Tom came down  
from upper  
level. 4:10

Bob ~~registered~~  
was only VE  
checking exams.

After my novice  
was graded

(31)

they gave it &  
610 back (missed 2)  
when ~~they~~ <sup>Got</sup> finished  
grading my Tech  
(cupstairis) Sandy  
brought the test  
back (I missed 2).

Only those intending  
to take code in  
next 10 weeks  
could get certificate.  
Had to be done in  
red so they couldn't  
be forged.

For the young boy,  
James, Sandy  
graded the novice. He  
failed. (He missed  
3 more than

(32)

allowed) Sandy  
was in the process  
of reading James  
questions for his  
second test when  
I left. At the  
beginning of the  
exam session  
Sandy said "Wid  
better check if it's  
a drivers license  
will be good? We  
need to see a picture".  
I got my D.C. out.  
Sandy Verl & told  
Tom it was ok.

All the VE's arrived  
without anything  
in hand. Just pkg  
already there.

FEDERAL COMMUNICATIONS COMMISSION  
P.O. Box 1020  
GETTYSBURG, PA 17326

Approved OMB  
3060-0003  
Expires 12/31/89

APPLICATION FOR AMATEUR RADIO STATION AND/OR OPERATOR LICENSE

NO FCC FILING FEE REQUIRED (see instruction H)

ADMINISTERING VEs' REPORT		EXAMINATION ELEMENTS							
Applicant is credited for: <input checked="" type="checkbox"/>		1(A)	1(B)	1(C)	2	3(A)	3(B)	4(A)	4(B)
A. FCC Amateur license held (97.25(a)):	Class <input checked="" type="checkbox"/>	(NT)	(GA)		(NTGA)	(TGA)	(GA)	(A)	
B. CERTIFICATE(S) OF SUCCESSFUL COMPLETION OF AN EXAMINATION HELD (97.25(b)):	<input checked="" type="checkbox"/>	Date issued	Date issued	Date issued	Date issued	Date issued	Date issued	Date issued	Date issued
C. FCC Commercial Radiotelegraph Operator License held (97.25(c)):	Number: <input checked="" type="checkbox"/>			Exp Date					
D. Examination elements passed that were administered at this session:	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
E. APPLICANT is qualified for operator license class: <input type="checkbox"/> None:		H. Date of VEC coordinated examination session:							
E1. <input type="checkbox"/> NOVICE (Elements 1(A), 1(B), or 1(C) and 2)		8-24-91							
E2. <input checked="" type="checkbox"/> TECHNICIAN (Elements 1(A), 1(B), or 1(C), 2 and 3(A))		I. VEC Receipt Date:							
<input type="checkbox"/> GENERAL (Elements 1(B) or 1(C), 2, 3(A), and 3(B))									
<input type="checkbox"/> ADVANCED (Elements 1(B) or 1(C), 2, 3(A), 3(B) and 4(A))									
<input type="checkbox"/> AMATEUR EXTRA (Elements 1(C), 2, 3(A), 3(B), 4(A), and 4(B))									
F. Name of Volunteer-Examiner Coordinator: (VEC coordinated sessions only)									
W5YI GROUP									
G. Examination session location: (VEC coordinated sessions only)									
MAR VISTA, CA									

SECTION I

1. IF YOU HOLD A VALID LICENSE ATTACH THE ORIGINAL LICENSE OR PHOTOCOPY ON BACK OF APPLICATION. IF THE VALID LICENSE OR CERTIFICATE OF SUCCESSFUL COMPLETION OF AN EXAMINATION WAS LOST OR DESTROYED, PLEASE EXPLAIN.			
2. CHECK ONE OR MORE ITEMS, NORMALLY ALL LICENSES ARE ISSUED FOR A 10 YEAR TERM.			
2A. <input type="checkbox"/> RENEW LICENSE—NO OTHER CHANGES <input checked="" type="checkbox"/>	EXPIRATION DATE (Month, Day, Year)		
2B. <input type="checkbox"/> REINSTATE LICENSE EXPIRED LESS THAN 2 YEARS <input checked="" type="checkbox"/>			
2C. <input checked="" type="checkbox"/> EXAMINATION FOR NEW LICENSE	FORMER LAST NAME SUFFIX (Jr., Sr., etc.)		
2D. <input type="checkbox"/> EXAMINATION TO UPGRADE OPERATOR CLASS			
2E. <input type="checkbox"/> CHANGE CALL SIGN (Be sure you are eligible—See Inst. 2E)	FORMER FIRST NAME MIDDLE INITIAL		
2F. <input type="checkbox"/> CHANGE NAME (Give former name) <input checked="" type="checkbox"/>			
2G. <input type="checkbox"/> CHANGE MAILING ADDRESS			
2H. <input type="checkbox"/> CHANGE STATION LOCATION			
3. CALL SIGN (If you checked 2C above, skip items 3 and 4)		4. OPERATOR CLASS OF THE ATTACHED LICENSE:	
5. CURRENT FIRST NAME	M.I.	LAST NAME	SUFFIX (Jr., Sr., etc.)
CHRISTINE	F	Mc ELWAIN	
6. DATE OF BIRTH (Month, Day, Year)	9-18-44		
7. CURRENT MAILING ADDRESS (Number and Street)	CITY	STATE	ZIP CODE
10331 LINDLEY #141	NORTHRIODE	CA	91326
8. CURRENT STATION LOCATION (Do not use a P.O. Box No., RFD No., or General Delivery. See Instruction 8)			
SAME AS NUMBER 7		CITY	STATE
9. Would a Commission grant of your application be an action which may have a significant environmental effect as defined by Section 1.1307 of the Commission's Rules? See instruction 9. If you answer yes, submit the statement as required by Sections 1.1308 and 1.1311. <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
10. Do you have any other amateur radio application on file with the Commission that has not been acted upon? If yes, answer items 11 and 12. <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			
11. PURPOSE OF OTHER APPLICATION		12. DATE SUBMITTED (Month, Day, Year)	
CERTIFICATION			
I CERTIFY THAT all statements herein and attachments herewith are true, complete, and correct to the best of my knowledge and belief and are made in good faith; that I am not a representative of a foreign government; that I waive any claim to the use of any particular frequency regardless of prior use by license or otherwise; and that the station to be licensed will be inaccessible to unauthorized persons.			
WILLFUL FALSE STATEMENTS MADE ON THIS FORM OR ATTACHMENTS ARE PUNISHABLE BY FINE AND IMPRISONMENT U.S. CODE TITLE 18, SECTION 1001			
13. SIGNATURE OF APPLICANT: (Must match item 5)		14. DATE SIGNED:	
Christine F. Mc Elwain		8-24-91	

ATTACH THE ORIGINAL LICENSE OR PHOTOCOPY HERE

## SECTION II—EXAMINATION INFORMATION

**SECTION II-A FOR NOVICE OPERATOR EXAMINATION ONLY.** To be completed by the Administering VEs after completing the Administering VE's Report on the other side of this form.

### CERTIFICATION

I CERTIFY THAT I have complied with the Administering VE requirements stated in Part 97 of the Commission's Rules; THAT I have administered to the applicant and graded an amateur radio operator examination in accordance with Part 97 of the Commission's Rules; THAT I have indicated in the Administering VE's Report the examination element(s) the applicant passed; THAT I have examined documents held by the applicant and I have indicated in the Administering VE's Report the examination element for which the applicant is given examination credit in accordance with Part 97 of the Commission's Rules.

1A. VOLUNTEER EXAMINER'S NAME: (First, MI, Last, Suffix) (Print or Type)

1B. VE'S MAILING ADDRESS: (Number, Street, City, State, ZIP Code)

1C. VE'S OPERATOR CLASS:

☐ GENERAL

☐ ADVANCED

☐ AMATEUR EXTRA

1D. VE'S STATION CALL SIGN

1E. LICENSE EXPIRATION DATE:

1F. IF YOU HAVE AN APPLICATION PENDING FOR YOUR LICENSE, GIVE FILING DATE:

1G. SIGNATURE: (Must match Item 1A)

DATE SIGNED

2A. VOLUNTEER EXAMINER'S NAME: (First, MI, Last, Suffix) (Print or Type)

2B. VE'S MAILING ADDRESS: (Number, Street, City, State, ZIP Code)

2C. VE'S OPERATOR CLASS:

☐ GENERAL

☐ ADVANCED

☐ AMATEUR EXTRA

2D. VE'S STATION CALL SIGN

2E. LICENSE EXPIRATION DATE:

2F. IF YOU HAVE AN APPLICATION PENDING FOR YOUR LICENSE, GIVE FILING DATE:

2G. SIGNATURE: (Must match Item 2A)

DATE SIGNED

**SECTION II-B FOR TECHNICIAN, GENERAL, ADVANCED, OR AMATEUR EXTRA OPERATOR EXAMINATION ONLY.** To be completed by the Administering VEs after completing the Administering VE's Report on the other side of this form.

### CERTIFICATION

I CERTIFY THAT I have complied with the Administering VE requirements stated in Part 97 of the Commission's Rules; THAT I have administered to the applicant and graded an amateur radio operator examination in accordance with Part 97 of the Commission's Rules; THAT I have indicated in the Administering VE's Report the examination element(s) the applicant passed; THAT I have examined documents held by the applicant and I have indicated in the Administering VE's Report the examination element(s) for which the applicant is given examination credit in accordance with Part 97 of the Commission's Rules.

1A. VOLUNTEER EXAMINER'S NAME: (First, MI, Last, Suffix) (Print or Type)

1B. VE'S STATION CALL SIGN:

1C. SIGNATURE: (Must match Item 1A)

DATE SIGNED:

2A. VOLUNTEER EXAMINER'S NAME: (First, MI, Last, Suffix) (Print or Type)

2B. VE'S STATION CALL SIGN:

2C. SIGNATURE: (Must match Item 2A)

DATE SIGNED:

3A. VOLUNTEER EXAMINER'S NAME: (First, MI, Last, Suffix) (Print or Type)

3B. VE'S STATION CALL SIGN:

3C. SIGNATURE: (Must match Item 3A)

DATE SIGNED:

W5YI-VEC PROGRAM  
EXAMINATION ANSWER SHEET

(Print)

Name: CHRISTINE F. McEWAN

A  
PASSED  
R60

Element: 3A Test Series: J901 Date: 8/24/91 Signature: Christine F. McEwan

- [1.] A ☐ B ☐ C ☐ D ☒
- [2.] A ☐ B ☒ C ☐ D ☐
- [3.] A ☐ B ☐ C ☒ D ☐
- [4.] A ☐ B ☐ C ☐ D ☒
- [5.] A ☐ B ☐ C ☒ D ☐
- [6.] A ☒ B ☐ C ☐ D ☐
- [7.] A ☒ B ☐ C ☐ D ☐
- [8.] A ☐ B ☒ C ☐ D ☒
- [9.] A ☒ B ☐ C ☐ D ☐
- [10.] A ☐ B ☒ C ☐ D ☐
- [11.] A ☐ B ☒ C ☐ D ☐
- [12.] A ☐ B ☒ C ☐ D ☐
- [13.] A ☐ B ☐ C ☐ D ☒
- [14.] A ☐ B ☐ C ☐ D ☒
- [15.] A ☒ B ☐ C ☐ D ☐
- [16.] A ☐ B ☒ C ☐ D ☐
- [17.] A ☐ B ☒ C ☐ D ☒
- [18.] A ☐ B ☒ C ☒ D ☐
- [19.] A ☐ B ☐ C ☒ D ☐
- [20.] A ☒ B ☐ C ☐ D ☐
- [21.] A ☒ B ☐ C ☐ D ☐
- [22.] A ☐ B ☐ C ☒ D ☐
- [23.] A ☐ B ☐ C ☒ D ☐
- [24.] A ☒ B ☒ C ☐ D ☐
- [25.] A ☐ B ☐ C ☐ D ☒

Total Minimum  
Quest- Correct  
ions to pass:

**NOVICE**  
Element 2  
30 22

**TECHNICIAN**  
Element 3A  
25 19

**GENERAL**  
Element 3B  
25 19

**ADVANCED**  
Element 4A  
50 37

**EXTRA CLASS**  
Element 4B  
40 30



- [26.] A ☐ B ☐ C ☐ D ☐
- [27.] A ☐ B ☐ C ☐ D ☐
- [28.] A ☐ B ☐ C ☐ D ☐
- [29.] A ☐ B ☐ C ☐ D ☐
- [30.] A ☐ B ☐ C ☐ D ☐
- [31.] A ☐ B ☐ C ☐ D ☐
- [32.] A ☐ B ☐ C ☐ D ☐
- [33.] A ☐ B ☐ C ☐ D ☐
- [34.] A ☐ B ☐ C ☐ D ☐
- [35.] A ☐ B ☐ C ☐ D ☐
- [36.] A ☐ B ☐ C ☐ D ☐
- [37.] A ☐ B ☐ C ☐ D ☐
- [38.] A ☐ B ☐ C ☐ D ☐
- [39.] A ☐ B ☐ C ☐ D ☐
- [40.] A ☐ B ☐ C ☐ D ☐
- [41.] A ☐ B ☐ C ☐ D ☐
- [42.] A ☐ B ☐ C ☐ D ☐
- [43.] A ☐ B ☐ C ☐ D ☐
- [44.] A ☐ B ☐ C ☐ D ☐
- [45.] A ☐ B ☐ C ☐ D ☐
- [46.] A ☐ B ☐ C ☐ D ☐
- [47.] A ☐ B ☐ C ☐ D ☐
- [48.] A ☐ B ☐ C ☐ D ☐
- [49.] A ☐ B ☐ C ☐ D ☐
- [50.] A ☐ B ☐ C ☐ D ☐

**W5YI-VEC PROGRAM**  
**EXAMINATION ANSWER SHEET**

(Print)

Name: CHRISTINE F. McEWAN

Element: 2 Test Series: H90 Date: 8-24-91 Signature: Christine F. McEwan

*2*  
*PASSED*  
*800*

- [1.] A ☐ B ☐ C ☒ D ☐
- [2.] A ☐ B ☒ C ☐ D ☐
- [3.] A ☐ B ☐ C ☐ D ☒
- [4.] A ☐ B ☐ C ☐ D ☒
- [5.] A ☐ B ☐ C ☐ D ☒
- [6.] A ☒ B ☐ C ☐ D ☐
- [7.] A ☐ B ☐ C ☐ D ☒
- [8.] A ☐ B ☒ C ☐ D ☐
- [9.] A ☐ B ☐ C ☐ D ☒
- [10.] A ☒ B ☐ C ☐ D ☐
- [11.] A ☐ B ☐ C ☐ D ☒
- [12.] A ☐ B ☐ C ☒ D ☐
- [13.] A ☒ B ☐ C ☐ D ☐
- [14.] A ☐ B ☐ C ☐ D ☒
- [15.] A ☒ B ☐ C ☐ D ☐
- [16.] A ☐ B ☒ C ☒ D ☐
- [17.] A ☐ B ☐ C ☐ D ☒
- [18.] A ☒ B ☐ C ☐ D ☐
- [19.] A ☐ B ☐ C ☒ D ☐
- [20.] A ☐ B ☒ C ☐ D ☐
- [21.] A ☒ B ☐ C ☐ D ☐
- [22.] A ☐ B ☐ C ☐ D ☒
- [23.] A ☐ B ☒ C ☐ D ☐
- [24.] A ☐ B ☒ C ☐ D ☐
- [25.] A ☐ B ☐ C ☒ D ☐

Total Minimum  
 Quest- Correct  
 ions to pass:

**NOVICE**  
 Element 2  
 30 22

**TECHNICIAN**  
 Element 3A  
 25 19

**GENERAL**  
 Element 3B  
 25 19

**ADVANCED**  
 Element 4A  
 50 37

**EXTRA CLASS**  
 Element 4B  
 40 30



- [26.] A ☐ B ☐ C ☐ D ☒
- [27.] A ☐ B ☒ C ☐ D ☐
- [28.] A ☒ B ☐ C ☐ D ☒
- [29.] A ☐ B ☐ C ☐ D ☒
- [30.] A ☐ B ☐ C ☒ D ☐
- [31.] A ☐ B ☐ C ☐ D ☐
- [32.] A ☐ B ☐ C ☐ D ☐
- [33.] A ☐ B ☐ C ☐ D ☐
- [34.] A ☐ B ☐ C ☐ D ☐
- [35.] A ☐ B ☐ C ☐ D ☐
- [36.] A ☐ B ☐ C ☐ D ☐
- [37.] A ☐ B ☐ C ☐ D ☐
- [38.] A ☐ B ☐ C ☐ D ☐
- [39.] A ☐ B ☐ C ☐ D ☐
- [40.] A ☐ B ☐ C ☐ D ☐
- [41.] A ☐ B ☐ C ☐ D ☐
- [42.] A ☐ B ☐ C ☐ D ☐
- [43.] A ☐ B ☐ C ☐ D ☐
- [44.] A ☐ B ☐ C ☐ D ☐
- [45.] A ☐ B ☐ C ☐ D ☐
- [46.] A ☐ B ☐ C ☐ D ☐
- [47.] A ☐ B ☐ C ☐ D ☐
- [48.] A ☐ B ☐ C ☐ D ☐
- [49.] A ☐ B ☐ C ☐ D ☐
- [50.] A ☐ B ☐ C ☐ D ☐



W5YI Volunteer Examiner Coordinator  
Element 2 - Novice Examination - Series H901

1. If you are operating your amateur station on 21150 kHz, in what meter band are you operating?
  - A. 80 meters
  - B. 40 meters
  - C. 15 meters
  - D. 10 meters
2. The amateur service rules were designed to provide a radio communications service that meets five fundamental purposes. What are those principles?
  - A. Recognition of business communications, advancement of the radio art, improvement of communication and business skills, increase in the number of trained radio operators and electronics experts, and the enhancement of international goodwill
  - B. Recognition of emergency communications, advancement of the radio art, improvement of communication and technical skills, increase in the number of trained radio operators and electronics experts, and the enhancement of international goodwill
  - C. Recognition of emergency communications, preservation of the earliest radio techniques, improvement of communication and technical skills, maintain a pool of people familiar with early tube-type equipment, and the enhancement of international goodwill
  - D. Recognition of emergency communications, advancement of the radio art, improvement of communication and technical skills, increase in the number of trained radio operators and electronics experts, and the enhancement of a sense of patriotism and nationalism
3. If you were to receive a voice distress signal from a station on a frequency outside your operator privileges, what restrictions would apply to assisting the station in distress?
  - A. You would not be allowed to assist the station because the frequency of its signals were outside your operator privileges
  - B. You would be allowed to assist the station only if your signals were restricted to the nearest frequency band of your privileges
  - C. You would be allowed to assist the station on a frequency outside of your operator privileges only if you used international Morse code
  - D. You would be allowed to assist the station on a frequency outside of your operator privileges using any means of radio communications at your disposal
4. What emission types are Novice control operators permitted to use from 3700 to 3750 kHz?
  - A. Phone only
  - B. CW and phone
  - C. All amateur emission privileges authorized for use on those frequencies
  - D. CW only
5. What emission types are Novice control operators permitted to use on the amateur 220-MHz band in ITU Region 2?
  - A. CW and phone only
  - B. CW and data only
  - C. Data and phone only
  - D. All amateur emission privileges authorized for use on 220 MHz
6. Another amateur gives you permission to use her amateur station. What are your responsibilities, as the control operator?
  - A. Both you and she are equally responsible for the proper operation of her station
  - B. Only the station licensee is responsible for the proper operation of the station, not you the control operator
  - C. You must be certain the station licensee has given proper FCC notice that you will be the control operator
  - D. You must inspect all antennas and related equipment to ensure they are working properly
7. When is an amateur operator permitted to transmit a message to a foreign country for a third party?
  - A. Anytime
  - B. Never
  - C. Anytime, unless there is a third-party traffic agreement between the US and the foreign government
  - D. When there is a third-party traffic agreement between the US and the foreign government, or when the third party is eligible to be the control operator of the station
8. What is the license class immediately above Novice class?
  - A. The Digital class license
  - B. The Technician class license
  - C. The General class license
  - D. The Experimenter's class license
9. Which one of the following call signs is a valid US amateur call?
  - A. CE2FTF
  - B. G3GVA
  - C. UA1ZAM
  - D. AA2Z

10. When are communications pertaining to business or commercial affairs of any party permitted in the amateur service?
- A. Only when the immediate safety of human life or immediate protection of property is threatened
  - B. There are no rules against conducting business communications in the amateur service
  - C. No business communications of any kind are ever permitted in the amateur service
  - D. Business communications are permitted between the hours of 9 AM to 5 PM, only on weekdays
11. What is one meaning of the Q signal "QTH"?
- A. Time here is
  - B. My name is
  - C. Stop sending
  - D. My location is ...
12. What is the meaning of the Morse code character AR?
- A. Only the called station transmit
  - B. All received correctly
  - C. "Over" or End of transmission
  - D. Best regards
13. What type of propagation uses radio signals refracted back to earth by the ionosphere?
- A. Sky wave
  - B. Earth-moon-earth
  - C. Ground wave
  - D. Tropospheric
14. Why should all antenna and rotator cables be grounded when an amateur station is not in use?
- A. To lock the antenna system in one position
  - B. To avoid radio frequency interference
  - C. To save electricity
  - D. To protect the station and building from damage due to a nearby lightning strike
15. If you are notified that your amateur station is causing television interference, what should you do first?
- A. Make sure that your amateur equipment is operating properly, and that it does not cause interference to your own television
  - B. Immediately turn off your transmitter and contact the nearest FCC office for assistance
  - C. Install a high-pass filter at the transmitter output and a low-pass filter at the antenna-input terminals of the TV
  - D. Continue operating normally, since you have no legal obligation to reduce or eliminate the interference
16. What precautions should you take before removing the shielding on a UHF power amplifier?
- A. Make sure all RF screens are in place at the antenna
  - B. Make sure the feed line is properly grounded
  - C. Make sure the amplifier cannot be accidentally energized
  - D. Make sure that the RF leakage filters are connected
17. What instrument is used to indicate the relative impedance match between a transmitter and antenna?
- A. An ammeter
  - B. An ohmmeter
  - C. A voltmeter
  - D. An SWR meter
18. List at least four good electrical insulators.
- A. Glass, air, plastic, porcelain
  - B. Glass, wood, copper, porcelain
  - C. Paper, glass, air, aluminum
  - D. Plastic, rubber, wood, carbon
19. Signals above what frequency are usually called radio-frequency signals?
- A. 20 Hz
  - B. 2000 Hz
  - C. 20,000 Hz
  - D. 1,000,000 Hz
20. Your receiver dial is calibrated in megahertz and shows a signal at 3.525 MHz. At what frequency would a dial calibrated in kilohertz show the signal?
- A. 0.003525 kHz
  - B. 3525 kHz
  - C. 35.25 kHz
  - D. 3,525,000 kHz
21. What is the term used to describe a current that flows first in one direction, then in the opposite direction, over and over?
- A. Alternating current
  - B. Direct current
  - C. Negative current
  - D. Positive current

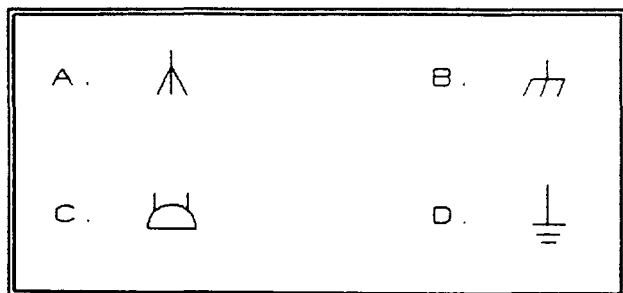


Diagram 2F-5.1

22. What is the symbol normally used to represent an earth-ground connection on schematic diagrams? (Please refer to Diagram 2F-5.1)

- A. Symbol A
- B. Symbol B
- C. Symbol C
- D. Symbol D

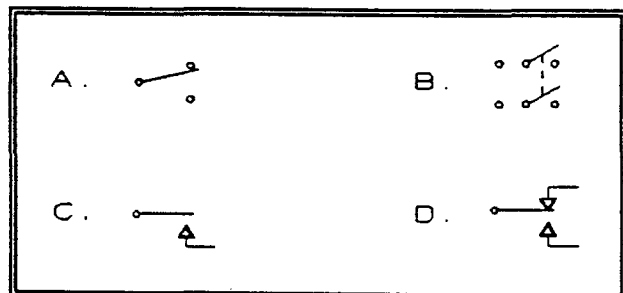


Diagram 2F-2.3

23. What is the symbol used on schematic diagrams to represent a double-pole, double-throw switch? (Please refer to Diagram 2F-2.3)

- A. Symbol A
- B. Symbol B
- C. Symbol C
- D. Symbol D

24. In an amateur station designed for Morse radiotelegraph operation, what station accessory will you need to go with your transmitter?

- A. A terminal-node controller
- B. A telegraph key
- C. An SWR meter
- D. An antenna switch

25. You discover that your tube-type transmitter power amplifier is radiating spurious emissions. What is the most likely cause of this problem?

- A. Excessively fast keying speed
- B. Undermodulation
- C. Improper neutralization
- D. Tank-circuit current dip at resonance

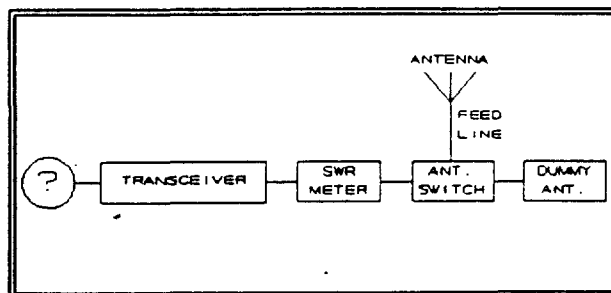


Diagram 2G-3.2

26. What is the unlabeled block (?) in this diagram of a radiotelephone station? (Please refer to Diagram 2G-3.2)

- A. A splatter filter
- B. A terminal-voice controller
- C. A receiver audio filter
- D. A microphone

27. What can be done to the power supply of a CW transmitter to avoid chirp?

- A. Resonate the power supply filters
- B. Regulate the power supply output voltages
- C. Use a buffer amplifier between the transmitter output and the feed line
- D. Hold the power supply current to a fixed value

28. On the Yagi antenna shown in Figure 2I-4, what is the name of section C?

- A. Director
- B. Reflector
- C. Boom
- D. Driven element

29. How is the approximate length (in feet) of a half-wavelength dipole antenna calculated?

- A. By substituting the desired operating frequency for  $f$  in the formula:  $150 / f$  (in MHz)
- B. By substituting the desired operating frequency for  $f$  in the formula:  $234 / f$  (in MHz)
- C. By substituting the desired operating frequency for  $f$  in the formula:  $300 / f$  (in MHz)
- D. By substituting the desired operating frequency for  $f$  in the formula:  $468 / f$  (in MHz)

30. A certain antenna system has an impedance of 1000 ohms on one band. What must you use to connect this antenna system to the 50-ohm output on your transmitter?

- A. A balun
- B. An SWR bridge
- C. An impedance matching device
- D. A low-pass filter

1. Under what circumstances does the FCC declare a temporary state of communication emergency?
  - A. When a declaration of war is received from Congress
  - B. When the maximum usable frequency goes above 28 MHz
  - C. When communications facilities in Washington, DC, are disrupted
  - D. When a disaster disrupts normal communications systems in a particular area
2. In an exchange of international third-party communications, when is the station identification procedure required?
  - A. Only at the beginning of the communications
  - B. At the end of each exchange of communications
  - C. The station identification procedure is not required during international third party communications
  - D. Only at the end of multiple exchanges of communications
3. Which operator licenses authorize privileges on 52.525 MHz?
  - A. Extra, Advanced only
  - B. Extra, Advanced, General only
  - C. Extra, Advanced, General, Technician only
  - D. Extra, Advanced, General, Technician, Novice
4. What are the station identification requirements for an amateur station transmitting signals to control a model craft?
  - A. Once every ten minutes, and at the beginning and end of each transmission
  - B. Once every ten minutes
  - C. At the beginning and end of each transmission
  - D. Station identification is not required provided that a label indicating the station call sign and the station licensee's name and address is affixed to the station transmitter
5. Notwithstanding the numerical limitations in the FCC Rules, how much transmitting power shall be used by an amateur station?
  - A. There is no regulation other than the numerical limits
  - B. The minimum power level required to achieve S9 signal reports
  - C. The minimum power necessary to carry out the desired communication
  - D. The maximum power available, as long as it is under the allowable limit 3AA-6-3.1 D What is the maximum transmitting power permitted an amateur station on 146.52 MHz?
6. What is the meaning of: "Your report is five seven..."?
  - A. Your signal is perfectly readable and moderately strong
  - B. Your signal is perfectly readable, but weak
  - C. Your signal is readable with considerable difficulty
  - D. Your signal is perfectly readable with near pure tone
7. What is the term used to describe first-response communications in an emergency situation?
  - A. Tactical communications
  - B. Emergency communications
  - C. Formal message traffic
  - D. National Traffic System messages
8. What is the usual input/output frequency separation for stations in repeater operation in the 2-meter band?
  - A. 1 MHz
  - B. 1.6 MHz
  - C. 170 Hz
  - D. 0.6 MHz
9. What effect does tropospheric bending have on 2-meter radio waves?
  - A. It increases the distance over which they can be transmitted
  - B. It decreases the distance over which they can be transmitted
  - C. It tends to garble 2-meter phone transmissions
  - D. It reverses the sideband of 2-meter phone transmissions
10. What are the two distinct sub-layers of the F layer of the ionosphere during the daytime?
  - A. Troposphere and stratosphere
  - B. F1 and F2
  - C. Electrostatic and electromagnetic
  - D. D and E
11. How are VHF signals within the range of the visible horizon propagated?
  - A. By sky wave
  - B. By direct wave
  - C. By plane wave
  - D. By geometric wave
12. What is the purpose of the ANSI RF protection guide?
  - A. It protects you from unscrupulous radio dealers
  - B. It sets RF exposure limits under certain circumstances
  - C. It sets transmitter power limits
  - D. It sets antenna height requirements

13. What is a multimeter?
- An instrument capable of reading SWR and power
  - An instrument capable of reading resistance, capacitance and inductance
  - An instrument capable of reading resistance and reactance
  - An instrument capable of reading voltage, current and resistance
14. When adjusting a transmitter filter circuit, what device is connected to the transmitter output?
- A multimeter
  - A set of Litz wires
  - A receiver
  - A dummy antenna
15. What is a directional wattmeter?
- An instrument that measures forward or reflected power
  - An instrument that measures the directional pattern of an antenna
  - An instrument that measures the energy consumed by the transmitter
  - An instrument that measures thermal heating in a load resistor
16. What is a microfarad?
- A basic unit of capacitance equal to  $10^{-12}$  farads
  - A basic unit of capacitance equal to  $10^{-6}$  farads
  - A basic unit of capacitance equal to  $10^{-2}$  farads
  - A basic unit of capacitance equal to  $10^6$  farads
17. What is Ohm's Law?
- A mathematical relationship between resistance, voltage and power in a circuit
  - A mathematical relationship between current, resistance and power in a circuit
  - A mathematical relationship between current, voltage and power in a circuit
  - A mathematical relationship between resistance, current and applied voltage in a circuit
18. What are the electrical properties of an inductor?
- An inductor stores a charge electrostatically and opposes a change in voltage
  - An inductor stores a charge electrochemically and opposes a change in current
  - An inductor stores a charge electromagnetically and opposes a change in current
  - An inductor stores a charge electromechanically and opposes a change in voltage
19. What is a capacitor dielectric?
- The insulating material used for the plates
  - The conducting material used between the plates
  - The ferrite material that the plates are mounted on
  - The insulating material between the plates
20. What circuit attenuates electrical energy above a certain frequency and below a lower frequency?
- A band-pass filter
  - A high-pass filter
  - An input filter
  - A low-pass filter
21. If the modulator circuit of your FM transmitter fails, what emission type would likely result?
- An unmodulated carrier wave
  - A phase-modulated carrier wave
  - An amplitude-modulated carrier wave
  - A frequency-modulated carrier wave
22. What other emission does phase modulation most resemble?
- Amplitude modulation
  - Pulse modulation
  - Frequency modulation
  - Single-sideband modulation
23. What type of parasitic beam antenna uses two or more straight metal-tubing elements arranged physically parallel to each other?
- A delta loop antenna
  - A quad antenna
  - A Yagi antenna
  - A Zepp antenna
24. What is a balanced antenna?
- A symmetrical antenna with one side of the feed point connected to ground
  - An antenna (or a driven element in an array) that is symmetrical about the feed point
  - A symmetrical antenna with both sides of the feed point connected to ground, to balance out harmonics
  - An antenna designed to be mounted in the center
25. How can you minimize exposure to radio frequency energy from your transmitting antennas?
- Use vertical polarization
  - Use horizontal polarization
  - Mount the antennas where no one can come near them
  - Mount the antenna close to the ground

8/24/91 - Novice

370 questions in Novice pool  
(includes one that was  
withdrawn but included  
in the test)

154 reviewed 41.6 %

216 not reviewed 58.4 %

## Chapter 12

# Element 2 Question Pool —With Answers

### — DON'T START HERE —

This chapter contains the complete question pool for the Element 2 exam. Element 2 is the written part of the Novice exam, and is also part of the Technician exam. The Technician exam also includes Element 3A. Chapter 13 contains the entire Element 3A question pool, with answers. To obtain a Novice license you must also pass a 5-WPM Morse code test. The Technician license does not require a code test.

Before you read the questions and answers printed in this chapter, be sure to read the text in the previous chapters. Use these questions as review exercises, when the text tells you to study them. Don't try to memorize all the questions and answers. This book was carefully written and prepared to guide you step by step as you learn about Amateur Radio. By understanding the electronics principles and Amateur Radio concepts in this book, you will enjoy our hobby more. You will also better appreciate the privileges granted by an Amateur Radio license.

This pool will be used until further notice from the Volunteer Examiner Coordinator's Question Pool Committee.

### HOW MANY QUESTIONS?

Your Element 2 exam will consist of 30 of these questions, selected by the Volunteer Examiners giving you the test. The ARRL/VEC and most other VECs have agreed to use the multiple-choice answers. Some VECs may use the questions printed here with different answers and/or distractors (incorrect answers).

### WHO GIVES THE TEST?

You may take your exam at a session coordinated by a Volunteer Examiner Coordinator. If so, check with that VEC to find out if they use these multiple-choice answers.

You might also take your Element 2 exam from two Volunteer Examiners with General class or higher licenses, but who are not part of the VEC program. These examiners must still use the questions exactly as printed. They may choose other answer formats, however. Ask your examiners what answer format they will use before you take the exam. Note that *only* the Novice license exam may be given by examiners who are not registered with a Volunteer Examiner program.

Volunteer Examiners for Novice licenses can request a Novice exam from the Educational Activities Department at ARRL Headquarters. They should include their own call signs, license classes and expiration dates, so the staff can verify that they are eligible to give the exam. If your examiners select the questions for your exam, we recommend the multiple-choice answers printed in this chapter. They have been carefully worded to provide the best answer and good distractors for each question. The examiners are free to choose

another answer format, such as fill-in-the-blank or even to give an oral exam, however.

### QUESTION POOL SECTIONS

The question pool is divided into nine sections, called subelements. (A subelement is a portion of the exam element, in this case Element 2.) The FCC specifies how many questions from each section must be on your test. For example, there must be ten questions from the Commission's Rules section, Subelement 2A. There must also be two questions from the Operating Procedures section, Subelement 2B, and so on. Table 12-1 summarizes the number of questions that make up an exam. The number of questions on an exam appears at the beginning of each subelement in the question pool, too. The subelements are broken into smaller groups, with one question specified to come from each smaller group. These sections are clearly shown in the questions pool.

Table 12-1  
Novice Exam Content

Subelement	Topic	Number of questions
2A	Commission's Rules	10
2B	Operating Procedures	2
2C	Radio-Wave Propagation	1
2D	Amateur Radio Practices	4
2E	Electrical Principles	4
2F	Circuit Components	2
2G	Practical Circuits	2
2H	Signals and Emissions	2
2I	Antennas and Feed Lines	3

The question numbers used in the question pool relate to the syllabus or study guide printed at the end of Chapter 1. The syllabus is an outline of topics covered by the exam. The first part of each question number (up to the decimal point) lists the syllabus point covered by that question. The number after the decimal point identifies the individual questions that go with that point. For example, question 2C-4.2 is the second question in the series about syllabus point 2C-4, sunspot cycle.

Good luck with your studies.

### Withdrawn Questions

FCC Rules changes sometimes make it necessary to withdraw certain questions from the pool. Withdrawn questions are noted in the following pages.

Pg. # indicates page # of my notes where subject matter was discussed  
# indicates no review of material

Subelement 2A—Rules and Regulations (10 Questions)

8-24-91  
Q# indicates # on test

One question must be from the following:

2A-1.1 What are the five principles that express the fundamental purpose for which the amateur service rules are designed?

- Pg 10
- A. Recognition of emergency communications, advancement of the radio art, improvement of communication and technical skills, increase in the number of trained radio operators and electronics experts, and the enhancement of international goodwill
  - B. Recognition of business communications, advancement of the radio art, improvement of communication and business skills, increase in the number of trained radio operators and electronics experts, and the enhancement of international goodwill
  - C. Recognition of emergency communications, preservation of the earliest radio techniques, improvement of communication and technical skills, maintain a pool of people familiar with early tube-type equipment, and the enhancement of international goodwill
  - D. Recognition of emergency communications, advancement of the radio art, improvement of communication and technical skills, increase in the number of trained radio operators and electronics experts, and the enhancement of a sense of patriotism

2A-1.2 Which of the following is *not* one of the basic principles for which the *amateur service* rules are designed?

- Pg 10
- A. Providing emergency communications
  - B. Improvement of communication and technical skills
  - C. Advancement of the radio art
  - D. Enhancement of a sense of patriotism and nationalism

2A-1.3 The amateur service rules were designed to provide a radio communications service that meets five fundamental purposes. Which of the following is *not* one of those principles?

- Pg 10
- A. Improvement of communication and technical skills
  - B. Enhancement of international goodwill
  - C. Increase the number of trained radio operators and electronics experts
  - D. Preserving the history of radio communications

2A-1.4

The amateur service rules were designed to provide a radio communications service that meets five fundamental purposes. What are those principles?

- Pg 2, 10  
Q2 on test
- A. Recognition of business communications, advancement of the radio art, improvement of communication and business skills, increase in the number of trained radio operators and electronics experts, and the enhancement of international goodwill
  - B. Recognition of emergency communications, advancement of the radio art, improvement of communication and technical skills, increase in the number of trained radio operators and electronics experts, and the enhancement of international goodwill
  - C. Recognition of emergency communications, preservation of the earliest radio techniques, improvement of communication and technical skills, maintain a pool of people familiar with early tube-type equipment, and the enhancement of international goodwill
  - D. Recognition of emergency communications, advancement of the radio art, improvement of communication and technical skills, increase in the number of trained radio operators and electronics experts, and the enhancement of a sense of patriotism

2A-2.1

What is the definition of the *amateur service*?

- Pg 9
- A. A private radio service used for personal gain and public benefit
  - B. A public radio service used for public service communications
  - C. A radio communication service for the purpose of self-training, intercommunication and technical investigations
  - D. A private radio service intended for the furtherance of commercial radio interests

2A-2.2

What name is given to the radio communication service that is designed for self-training, intercommunication, and technical investigation?

- Pg 9
- A. The amateur service
  - B. The Citizen's Radio Service
  - C. The Experimenter's Radio Service
  - D. The Maritime Radio Service

2A-3.1

What document contains the specific rules and regulations governing the amateur service in the United States?

- Pg 9
- A. Part 97 of title 47 CFR (Code of Federal Regulations)
  - B. The Communications Act of 1934 (as amended)
  - C. The Radio Amateur's Handbook
  - D. The minutes of the International Telecommunication Union meetings

2A-3.2

Which one of the following topics is *not* addressed in the rules and regulations of the amateur service?

- Pg 13
- A. Station operation standards
  - B. Technical standards
  - C. Providing emergency communications
  - D. Station construction standards

- Pg # indicates page # of my notes where subject is discussed

- # indicates no review of material

- Q# indicates # on test



- 2A-4.1 What is the definition of an *amateur operator*?  
 Pg 13  
 A. A person who has not received any training in radio operations  
 B. A person holding a written authorization to be the control operator of an amateur station  
 C. A person who performs private radio communications for hire  
 D. A trainee in a commercial radio station

- 2A-4.2 What term describes a person holding a written authorization to be the control operator of an amateur station?  
 Pg 13  
 A. A Citizen Radio operator  
 B. A Personal Radio operator  
 C. A Radio Service operator  
 D. An amateur operator

One question must be from the following:

- 2A-5.1 What is the portion of an amateur operator/primary station license that conveys operator privileges?  
 Pg 13  
 A. The verification section  
 B. Form 610  
 C. The operator license  
 D. The station license

- 2A-5.2 What authority is derived from an operator/primary station license?  
 Pg 13  
 A. The authority to operate any shortwave radio station  
 B. The authority to be the control operator of an amateur station  
 C. The authority to have an amateur station at a particular location  
 D. The authority to transmit on either amateur or Class D citizen's band frequencies

- 2A-6.1 What authority is derived from a written authorization for an amateur station?  
 Pg 13  
 A. The authority to use specified operating frequencies  
 B. The authority to operate an amateur station  
 C. The authority to enforce FCC Rules when violations are noted on the part of other operators  
 D. The authority to transmit on either amateur or Class D citizen's band frequencies

- 2A-6.2 What part of your amateur license gives you authority to have an amateur station?  
 Pg 13  
 A. The operator license  
 B. The FCC Form 610  
 C. The station license  
 D. An amateur operator/primary station license does not specify a station location

- 2A-7.1 What is an *amateur station*?  
 A. A licensed radio station engaged in broadcasting to the public in a limited and well-defined area  
 B. A radio station used to further commercial radio interests  
 C. A private radio service used for personal gain and public service  
 D. A station in an amateur service consisting of the apparatus necessary for carrying on radio communications

- 2A-8.1 Who is a *control operator*?  
 Pg 13  
 A. An amateur operator designated by the licensee of a station to be responsible for the transmissions from that station to assure compliance with the FCC rules  
 B. A person, either licensed or not, who controls the emissions of an amateur station  
 C. An unlicensed person who is speaking over an amateur station's microphone while a licensed person is present  
 D. A government official who comes to an amateur station to take control for test purposes

- 2A-8.2 If you designate another amateur operator to be responsible for the transmissions from your station, what is the other operator called?  
 Pg 13  
 A. Auxiliary operator  
 B. Operations coordinator  
 C. Third party  
 D. Control operator

- 2A-9.1 List the five United States amateur operator/primary station license classes in order of increasing privileges.  
 Pg 18  
 A. Novice, General, Technician, Advanced, Amateur Extra  
 B. Novice, Technician, General, Advanced, Digital  
 C. Novice, Technician, General, Amateur, Extra  
 D. Novice, Technician, General, Advanced, Amateur Extra

- 2A-9.2 This question has been withdrawn.

- 2A-9.3 What is the license class immediately above Novice class?  
 Pg 10, 98  
 A. The Digital class license  
 B. The Technician class license  
 C. The General class license  
 D. The Experimenter's class license

One question must be from the following:

- 2A-10.1 This question has been withdrawn

- 2A-10.2 What frequencies are available in the amateur 40-meter wavelength band for a control operator holding a Novice class operator license in ITU Region 2?  
 A. 3500 to 4000 kHz  
 B. 3700 to 3750 kHz  
 C. 7100 to 7150 kHz  
 D. 7000 to 7300 kHz

- 2A-10.3 What frequencies are available in the amateur 15-meter wavelength band for a control operator holding a Novice class operator license?  
 Pg 11  
 A. 21.100 to 21.200 MHz  
 B. 21.000 to 21.450 MHz  
 C. 28.000 to 29.700 MHz  
 D. 28.100 to 28.200 MHz

- 2A-10.4 What frequencies are available in the amateur 10-meter wavelength band for a control operator holding a Novice class operator license?  
 Pg 11  
 A. 28.000 to 29.700 MHz  
 B. 28.100 to 28.300 MHz  
 C. 28.100 to 28.500 MHz  
 D. 28.300 to 28.500 MHz